

Chemical Watch Factsheet

A Beyond Pesticides/ NCAMP Factsheet

Dicamba

The herbicide dicamba (Banvel™, Brush Buster™), originally registered by Velsicol Chemical Corp. in 1967, has attracted attention because of the toxicity of its contaminants, both dioxin and nitrosamines, and its propensity to leach through soil. Commonly used on corn to control the Canada thistle, it is also used on turf, rights-of way, pastures, seed-crops, asparagus, and sugarcane to control woody plants and broadleaf weeds. Dicamba is now produced by Sandoz Corp. of Switzerland, which bought Velsicol's agricultural chemicals division last year.

Dicamba is absorbed by the leaves and translocated throughout the plant, where it exerts an auxin-like growth regulatory effect. Soybeans are extremely sensitive to dicamba and toxic effects have been shown to occur not only from drift, but also from volatilization from the surfaces of treated leaves in neighboring fields.

According to a 1983 Registration Standard, dicamba is of low acute toxicity by either

the oral or dermal routes, but is quite irritating to the eyes.

Dicamba is rapidly excreted in urine, mostly as the unchanged compound and as 3,6-dichloro-2-hydroxybenzoic acid, also known as 3,6-dichloro-salicylic acid. Studies indicate that residues do not bioaccumulate in biological systems. Based on available industry data, EPA does not consider dicamba to be either a reproductive

groundwater.

EPA has identified a number of health and safety data gaps, which include chronic testing, carcinogenicity, environmental fate, exposure assessment, and certain residue tests, most of which are due by September 1987. The Registration Standard noted that the manufacture of dicamba has the

potential to produce dichlorodibenzo-p-dioxin (DCDD), and levels of up to 50 parts per billion (ppb) of DCDD have been found. No 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) residues, the ultra-toxic form of "Dioxin," found at Times Beach, MO, have been found down to a level of detection of 2 ppb, and EPA says that its presence would not be expected.

Another contaminant of the amine formulations of dicamba is the carcinogen dimethylnitrosamine (DMA). EPA says that less than 1 ppm is expected to contaminate dicamba, and that the risk level to people is extremely low at that level, on the order of 10⁻⁷ to 10⁻⁸.

toxin or to cause birth defects, and preliminary short term testing has not indicated any mutagenic activity.

A major problem with dicamba is its extreme mobility in soils, regardless of organic matter or clay content, and high water solubility. Dicamba residues are both quite persistent (2 months to 1 year) and able to move vertically in the soil column. In fact, USDA found that dicamba was the most mobile of forty herbicides evaluated, a warning that dicamba would likely contaminate

chemicalWATCH Stats:

CAS Registry Number: 1918-00-9

Chemical Class: Chlorinated benzoic acid herbicide

Use: Post-emergent control of broadleaf weeds and woody plants

Toxicity rating: Slightly toxic

Signal Words: Caution, Warning, Danger

Health Effects: Developmental and reproductive toxin

Environmental Effects: Dicamba has low toxicity to organic organisms and is nontoxic to birds and bees. It is moderately persistent and highly mobile in soils and is likely a groundwater contaminant.

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Dicamba salts formulated for herbicidal use include: dimethylamine (DMA) salt, sodium (NA) salt, isopropylamine (IPA) salt, diglycolamine (DGA) salt, and potassium (K) salt. Dicamba is listed on the Toxics Release Inventory (TRI) for being a developmental toxin. Research has also suggested that dicamba is a DNA damage agent and should be considered potentially hazardous to humans.

While there are no observed acute effects on fish and aquatic invertebrates, assessments indicate that dicamba has the potential for causing risk to endangered birds, mammals, and non-target plants. Chronic risk assessment indicates that mammals could potentially be at risk for developmental/reproductive effects.

Recent studies identified a gene that enables crops to tolerate being sprayed with dicamba, thereby expanding the range of genetically engineered (GE) crops available. Citing previous experience with glyphosate resistant crops, environmentalists are now concerned that this will increase use of toxic herbicides like dicamba, while negatively impacting health and the environment.

The Reregistration Eligibility Decision (RED) for dicamba was completed in June 2006. Due to concern over the risks to terrestrial animals, the EPA recommends reducing the application rate of dicamba to 1.0 lb ai/acre for a single application and to 2.0 lb ai/acre per year for all use patterns. Despite the fact that dicamba can contaminate groundwater, the EPA found that it was not necessary to mitigate drinking water, or residential exposure to dicamba.

Dicamba *chemicalWATCH* Factsheet Bibliography

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